REMARKS

In response to the above Office Action, the non-elected claims 24 and 34-39 have been cancelled to advance the prosecution of the case.

Claim 25 relates to a copolymer of ethylene and a further 1-olefin, the copolymer having a SCB (short chain branching) of 2 to 10 per 1000 carbon atoms and having a defined modulus to SCB ratio.

The SCB effectively defines the amount of comonomer present in the copolymer. Thus the minimum level, two short chain branches per thousand C atoms, represents two comonomer units per 500 (1000/2) ethylene units. This corresponds to 0.4 moles %. The maximum amount defined in the claims is 10 SCBs per 1000 carbons and this represents 10 comonomer units per 500 ethylene units, i.e., 2.0 moles %. Thus the range is 0.4 to 2.0 moles of comonomer.

The SCB/modulus relationship provides a numerical definition for the fact that, in the present invention, the claimed copolymers have a higher modulus than would be expected for conventional copolymers having the defined level of comonomer incorporation. For example, the copolymers are more rigid than is customary for a given comonomer level.

In the Office Action, the Examiner rejected claims 25-28 and 31-33 under 35 U.S.C. §102(e) for being anticipated by U.S. Patent No. 5,955,555 to Bennett. The same claims were also rejected under 35 U.S.C. §102(b) for being anticipated by or, in the alternative, under 35 U.S.C. §103(a) for being obvious over Yasuhiko (JP 10-007712), hereafter Yasuhiko.

Bennett relates to homopolyethylenes prepared by polymerizing ethylene in the presence of a metal complex of 2,6-diacylpyrimidinebis(imine) or like catalyst. There is

no suggestion of incorporating a comonomer into the homopolymer to produce polymers having any branching whatsoever let alone ones having the defined content of copolymers.

The Examiner refers to the possibility of the claimed ethylene copolymers containing "negligible" quantities of comonomer so that the properties of the resulting copolymers would be the same as a homopolymer of ethylene. However, reference to the above figures shows that this is not the case. Rather, there is at least 0.4 moles of comonomer present.

Accordingly, neither claim 25 nor claims 26-28 and 31-33 dependent therefrom can be considered to be anticipated by Bennett. Its withdrawal as a ground of rejection under §102(e) is requested.

The Yasuhiko reference relates to a process for oligomerizing ethylene to produce lower olefins, for example 1-hexene which can be used, for example, as comonomers in the production of LLDPE. The catalyst employed is preferably a chromium or other defined metal complex of a pyrimidylbis(imine) type of ligand. The complex is activated using an organoaluminium compound. There does not appear to be any Examples of actually copolymerizing ethylene and the produced oligomer to make copolymers, only a process for producing the α-olefin oligomer.

Thus it is not seen how the reference can be said to anticipate the claims which require the presence of a specific amount of comonomer. Consequently, its withdrawal as a ground of rejection under §102(b) is requested.

The Yasuhiko reference appears to use a catalyst similar to that of Bennett and WO 98/27124 cited on page 2, line 31 of the specification and also GB 9718775.1

referred to at page 3, line 2 of the specification. These references relate to a similar catalyst and to the polymerization or oligomerization of ethylene therewith. However, as can be seen from the specification at page 13, lines 21 to 24:

> "One disadvantage of the catalysts disclosed in GB 9718775.1A, where the only catalyst in the system is catalyst (1) as defined in this invention, is that they produce copolymers having only a relatively low level of comonomer incorporation for a given level of comonomer in the reaction vessel."

It was the use of the mixed catalyst system of (1) and (2) that enabled the inventors to make copolymers having the defined number of SCBs. In other words, copolymers having significantly higher levels of comonomer incorporation for the same level of comonomer reactant. See page 13, lines 8-15 and 24-27 of the specification.

In this invention, the copolymers having the defined properties are preferably prepared by copolymerizing ethylene with a comonomer 1-olefin in the presence of (1) a first catalyst of the pyridylbisimine type activated with an alumoxane and (2) a further catalyst. Applicants were surprised that copolymers having the defined properties could be prepared using such a catalyst mixture. The use of the single catalyst of Bennett or the use of the similar Yasuhiko oligomerization catalyst would not produce copolymer of the defined type.

Thus it is submitted that there is no teaching in Yasuhiko that would enable a man skilled in the art to make copolymers having the properties defined by the claims. Its withdrawal as a ground of rejection under §103(a) is therefore requested.

It is believed claims 25-28 and 31-33 are in condition for allowance.

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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